PART 11

PARTICULAR MECHANICAL REQUIREMENTS FOR STP

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PART 11

PARTICULAR MECHANICAL REQUIREMENTS FOR MAJOR MECHANICAL EQUIPMENTS FOR STP

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PART 11

MAJOR MCHANICAL EQUIPMENTS FOR STP

Table 11- 1: MAJOR MECHANICAL EQUIPMENTS for Upgradation of 40 MLD STP at Raja Canal (Phase-I)

Note : The Bidder at his own responsibility and risk is encouraged to visit and examine the Site of Works and its surroundings and obtain all information that may be necessary for preparing the Bid and entering into a contract for construction of the Works.

Sl. No.	Item	Type	Unit Process / Location	Minimum Number of Units				Minimum Installed Capacity per Unit		Minimum Requirements	Electrical Drive Type (CS/VFD)	Service (C/I)	No of Units Connected to STP Generator
				Working	Standby	Store	Total	Capacity	UOM				
A	**Primary treatment Unit**												
1	Manual Bar Screen	Bar Screen	Existing Distribution chamber-2	2	0	0	2	-	-	To suit existing structure at site MOC: SS316, Barspacing:20 to 25mm bar thickness 10mm. bar width:50mm Shall be supplied with cleaning rakes SS304	-	-	-
2	Mechanical Fine bar screen	Bar screen	PTU	1	1	-	2			MOC: SS316, Bar spacing: 6mm, Bar thickness: 4 x 8mm	-	C	2
3	Manual Screen for fine screen channel	Bar Screen	PTU	1	0	-	1			Bar spacing: 25 mm, Bar thickness: min 8mm. MOC: SS316	-	-	
4	Belt Conveyor for fine bar screens	Belt	PTU	1	0	-	1			600mm width (minimum) (Length of belt conveyor shall be as per requirement at	CS	C	1

Sl. No.	Item	Type	Unit Process / Location	Minimum Number of Units				Minimum Installed Capacity per Unit		Minimum Requirements	Electrical Drive Type (CS/VFD)	Service (C/I)	No of Units Connected to STP Generator
				Working	Standby	Store	Total	Capacity	UOM				
										site condition)			
5	Screen Container	Covered Hydraulic Tractor Trailer	STP	1	1	-	2	2	m^3				
6	Trolley for sludge (Grit Mechanism)	Grit		2	0		2						
7	Grit collector, classifier and organic return pumps	Vortex Grit chamber and Classifier	PTU	2	0		2	Avg flow: 40 MLD & Peak flow: 80 MLD	MLD	All wetted parts shall be in SS316. Vortex drive motor: 1.11KW Grit Classifier: 0.24KW; Turbo Grit pump: 7.46KW	-	C	2
B	**Aeration Tanks**												
8	Anoxic tank Mixers (Existing and New tank)	Mixers	Anoxic tank	6	0		6	-		MOC: SS316L. Lifting crane and davit to be included. **Note**: 2 Nos mixers newly replaced in 2021. Additional 4 nos to be provided as part of scope of supply	CS	C	6
9	Aspirating Aerators	Floating type	Aeration tank	30	2		32	-		Recommended HP of each aerator: 37.5 HP		C	32

Sl. No.	Item	Type	Unit Process / Location	Minimum Number of Units				Minimum Installed Capacity per Unit		Minimum Requirements	Electrical Drive Type (CS/VFD)	Service (C/I)	No of Units Connected to STP Generator
				Working	Standby	Store	Total	Capacity	UOM				
										(Minimum). Wetted parts – Housing assembly, Atomizer and Other aerator parts – SS 304, 720 - 750RPM,			
10	Internal recycle pumps	Pumps	Aeration Tank	4	2		6	875	m^3/hr	875 m3/hr @ 3 MWC. Guide Rail without Strip - MoC: GI with Coupler. Lifting Chain - MoC : Alloy Steel - W/O_GI - Lifting chain with "Oval" Ring	-	C	6
11	Hoist for Internal recycle pumps	Electric	Aeration Tank	1	0		1			Material handling capacity to be selected based on equipment weight handled.	CS	I	1
C	**CHEMICAL HANDLING**												
12	Alum Dosing pump		Chemical building	2	1	0	3	300-500	lph	Capacity of Alum dosing and storage to be selected based on peak flow treatment of the plant.	CS	C	3
13	Alum solution tank		Chemical building	2	0	0	2	15000	liters	1.3 m Día x 1.2 m LD (For 24 hours storage)	-	-	-
14	Agitator for alum Dosing		Chemical building	2	0	0	2	100	RPM	Motor 15Hp, 1440RPM with SS316L shaft and blade.			
15	Complete alum dosing			1	0	0	1		LOT				

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				Working	Standby	Store	Total	Capacity	UOM				
	system with all accessories												
D	**SECONDARY CLARIFIER**												
16	Secondary clarifiers	Clarifier	Secondary treatment	4	0	-	4			Dimension of tank- Día: 33m, SWD: 3.5m, FB: 0.3m, HRT= 3.6 hours MOC: MS Spray Galvanized; Tank: RCC; Anchors & Hardware in SS316 construction	CS	C	4
17	Telescopic Valve Assembly		Secondary treatment	4	0	0	4	200	Dia				
18	RAS pumps	Submersible Centrifugal pumps	RAS Sump	3	3	-	6	585	m^3/hr	9.5 MWC head Guide Rail without Strip - MoC: GI with Coupler, Lifting Chain - MoC : Alloy Steel - W/O_GI - Lifting chain with "Oval" Ring	VFD	C	6
19	Non Submersible Agitator	No submersible		1	0	0	1			No. of impellers 3 nos., speed 75RPM, profiler dia. 1000mm, flow 3600m^3/hr			
E	**DISC CLOTH FILTERS**												
20	Disc Cloth filter		Disc filter building	2	0	-	2	Avg flow: 40	MLD	Inlet Avg/Peak TSS 30 ppm; Outlet TSS from	CS	C	2

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				Working	Standby	Store	Total	Capacity	UOM				
								MLD and Peak flow= 80 MLD		Disc filter: 10 mg/l; Filter Media: Woven polyester filter cloth with 10 microns filter opening size.			
21	Chemical cleaning unit as necessary for disc filter		Disc filter building	1	0	-	1			Chemical cleaning unit for disc filter with trolley	CS	C	1
22	Hoist With monorail	Electric	Disc filter	1	0	-	1	2	MT		CS	I	1
23	Manual Fine screen		Before disc filter	1	0	-	1			As per Disc Filter Vendor requirement, MOC SS 316.			
24	Disc filter outlet pumps	Submersible pumps	Disc filter outlet	4	2	-	6			$850m^3/hr$ @ 8mLC. MoC: GI with Coupler, Lifting Chain - MoC : Alloy Steel - W/O_GI - Lifting chain with "Oval" Ring	VFD	C	6
F	**Chlorination System**												
25	Chlorine tonners		Chlorination Building	4	6	-	10			900 kgs			
26	Chlorinators	Vacuum type-Gas Feed	Chlorination Building	1	1	-	2			20 kg/hr			

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				Working	Standby	Store	Total	Capacity	UOM				
27	Chlorine Ejector	Inline vacuum induction	Chlorination Building	1	1	-	2						
28	Chlorination Booster pump (Horizontal centrifugal)	Pump	Chlorination building	1	1	-	2						
29	Chlorine Cylinder Load Cell	Electronic type	Chlorination Building	LS	-	-	LS						
30	Non submersible Agitator	Agitator	Mixing Tank	1	0	-	1			MOC: SS316L Tank Volume to be mixed: 16.8 m3	CS	C	1
31	Chlorine Neutralization Pit	-	Chlorination Building	1	0	-	1						
32	Caustic Storage bins	GRP	Adjacent to Chlorination Building	1	0	-	1						
33	Emergency chlorine scrubber with all pumps, blowers and other accessories for proper functioning of scrubber system	Caustic wet chemical scrubber – Automatic	Adjacent to Chlorination Building	1	0	-	1						

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				Working	Standby	Store	Total	Capacity	UOM				
34	Exhaust Fans	Duct Mounted Axial flow fan	Chlorination Building	5	0	0	5			Ducted from floor level to above building height.			
35	Safety equipment including Air breathing apparatus complete with face masks, air tonners and all ancillary equipment, Safety Clothing, Potable air compressors, safety showers, eyewash, Emergency repair kit, Glass fronted PVC Cabinet, resuscitators, lifting beam, telephone and weighing scale.	-	Chlorination Building	1	0	0	1						
36	Neutralization pumps	Submersible pumps	Neutralization pit	1	0	0	1	15	m^3/hr	15 Cmph, 10 MWC head, Guide Rail without Strip - MoC: GI with Coupler, Lifting Chain - MoC: Alloy Steel - W/O_GI - Lifting chain with "Oval" Ring		C	1

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				Working	Standby	Store	Total	Capacity	UOM				
G	**Sludge Thickening and Dewatering**												
37	Sludge Thickener	Gravity Sludge Thickener	Thickener	1	0	0	1		Nos	Circular, Center Column supported Gravity thickener with central drive 19m dia x 4m Side Water Depth + 0.5 m. Material of construction: MS hot dipped galvanized & RCC. Anchors & Hardware in SS316 construction	CS	C	1
38	Thickened sludge feed pump (Centrifuge feed pump)	Submersible or Screw pumps	Thickened Sludge sump	1	1	0	2	49	m^3/hr	49 CMPH @ 20 MWC. MOC: Cast Iron with Stainless steel internals	CS	C	2
39	Filtrate/ Centrate pumps	Submersible pumps	Filtrate/ Centrate sump	1	1	0	2	53	m^3/hr	53 CMPH @ 13 MWC. Guide Rail without Strip - MoC: GI with Coupler. Lifting Chain - MoC : Alloy Steel - W/O_GI - Lifting chain with "Oval" Ring	CS	C	2
40	Monorail, Chain pulley block with Travelling Trolley	Manual	Thickened Sludge Sump	1	0	0	1	1	MT	MoC: SS 316.		I	1
41	Dewatering Centrifuge	Solid Bowl Decanter	Dewatering Building	1	1		2	30	m^3/hr	Including control panel, solid chute in SS304,	CS	2	2

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				Working	Standby	Store	Total	Capacity	UOM				
						0				liquid chute in SS304, motors, set of special tools, standard spares			
42	Motorized Monorail Hoist (Electric hoist) with I beam)	Motorized Monorail Hoist	Dewatering Building	1	0	-	1	2	MT	Capacity suitable to handle centrifuge	CS	I	1
43	Polymer Storage Tank/bins	Covered bin	Dewatering Building	1	0	0	1			GRP 1000 liters (minimum)			
44	Polymer Preparation (Batch) Tank	-	Dewatering Building	2	0	0	2	14	m^3	Minimum working volume required.			
45	Polymer Feeder (Volumetric)	As per vendor	Dewatering building	2	0	0	2				CS	C	2
46	Polymer Batch Tank Agitator	As per vendor	Dewatering building	2	0	0	2			SS316	CS	C	2
47	Polymer Metering Pump and its accessories	Positive displacement	Dewatering building	2	1	0	3	600	lph	Head as per site requirements.			
48	Monorail, Chain pulley block with Travelling Trolley		Poly Dosing system	1	0	0	1	2	MT	MoC: SS 316	CS	I	1
49	Dewatered Sludge Conveyor	Belt / Screw	Dewatering Building	1	-	-	1		-	-	CS	I	
50	Dewatered Sludge Hoppers	Cut Gate	Dewatering Building	1	1	-	2		-	SS304	CS	I	
51	Dewatered Sludge Containers		Dewatering Building	1	1	-	2		m^3	-	-	-	
H	**Plant and Service water storage tank**												
52	Service water pumps	Submersible	Plant and	1	1	0	2	42	m^3/hr	42 CMPH, 27 MWC	CS	C	2

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				Working	Standby	Store	Total	Capacity	UOM				
		pumps	Service water tank							head. Guide Rail without Strip - MoC: GI with Coupler. Lifting Chain - MoC : Alloy Steel - W/O_GI - Lifting chain with "Oval" Ring			
53	Motive water pumps	Submersible pumps	Plant and Service water tank	1	1	0	2	30	m^3/hr	30 CMPH, 40 MWC head. Guide Rail without Strip - MoC: GI with Coupler. Lifting Chain - MoC : Alloy Steel - W/O_GI - Lifting chain with "Oval" Ring. Motor Rating 22.5kW / 30hp	CS	C	2
54	Monorail, Chain pulley block with Travelling Trolley	Monorail, Chain pulley block with Travelling Trolley	Service and plant water pumps	1	-	-	1	1	MT	MoC: SS 316	-	-	
I	**MISCELLANEOUS ITEMS**												
55	Mobile JIB crane			2	0	-	2	1	MT	Duty: Class II as per IS: 15419-2004 & IS 383. Hook : Single Shank, Forged, confirming to IS:15560 with Spring Latch.	CS	I	1

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56	Fire Extinguishers (ABC)			1		-	1	LS		Quantity to be arrived as per site requirements			
57	Fire Extinguishers (CO_2)			3	-		3		Nos				
58	Exhaust Fans	Axial flow fan		20	0	0	20		Nos		CS	I	20
59	Air conditioning	Duct Mounted Airconditioning System	SCADA, Control room Building	2	0	0	2	2	Ton	-	CS	C	
60	Air conditioning	Split AC	Engineers room	1	-	-	1	As per requirement	ton				

Legend: CS = Constant Speed; VFD = Variable Frequency Drive; VS = Variable Speed; C= Continuous; I = Intermittent; UOM = Unit of Measurement, LS = Lump sum

Notes

1) It is bidders responsibility to visit the Plant and collect correct existing equipment details before submitting the Bid.

2) Sluice gates, Valves etc are not indicated in this equipment list as this is only a major mechanical equipment list. It is bidders responsibility to visit site and collect correct details before submitting the Bid. Valves and gates as necessary for complete plant and as elsewhere indicated in specifications shall be supplied.

3) Any Pump heads provided in this document are indicative. All pump heads shall be as per final approved calculation during Detail design engineering.

End of Part 11